"Challenges to Assuring the Health of the Gulf of Mexico"

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As Delivered

It's nice to be back in the Gulf region!

This Summit is timely:

- We can take stock of progress made and work yet to do.
- We have had time for reflection, for investigation, for planning, and for building new relationships.
- The path ahead will require significant, sustained effort.
- So, communication, openness, coordination and partnerships are critical.

Special thanks to:

- Harte Research Institute and its many university, foundation and NGO partners for hosting and organizing the Summit. These remarkable partnerships are exactly what will be needed to restore the Gulf for they integrate across geography and perspectives. A cacophony of voices is counterproductive. And it's especially helpful to have concrete proposals on the table.
- Lisa Jackson for her leadership on the Gulf Coast Ecosystem Restoration Task Force and its Strategy document that provides an integrated view needed to guide actions.
- Nancy Sutley for her vision and leadership in crafting and implementing the National Ocean Policy that provides the overarching framework for integrated approaches to healthy oceans, coasts and communities.
- And to all of you – engaged citizens, scientists, students, planners and doers from multiple nations – who care deeply about the future beauty and bounty of the Gulf and who are willing to roll up your sleeves and work for a healthy Gulf.

THE GULF OF MEXICO ECOSYSTEM

When he issued the Executive Order to establish the Gulf Coast Ecosystem Restoration Task Force, President Obama called the Gulf Coast a "national treasure". Indeed, it is that -- and more, it is also an international treasure. Different stakeholders may focus on a subset of the Gulf's bounty: highlighting seafood or wildlife or recreational opportunities, or gas and oil, or transportation.

But this national and international treasure is an integrated system. The coasts, the blue water,

the people are all interconnected and interdependent. Our vision for the Gulf must also be holistic.

Well before the Deepwater Horizon oil spill, the Gulf and its residents were challenged by multiple threats. Now, our collective focus is squarely on how to restore the health, prosperity and resilience of this coupled human-natural system.

NOAA'S ROLE AND PERSPECTIVES

The focus that NOAA brings to this restoration reflects our overall approach: science-based, collaborative, holistic, and with an eye toward the future, as described in the National Ocean Policy.

We will continue to champion an integrated approach that is ecosystem-based, takes climate change into account, and pays attention to the blue waters as well as the coast, to the people as well as the environment. We know that a healthy Gulf is a prerequisite for healthy people, a strong economy, national and homeland security, social justice and the unique cultures of the Gulf.

We appreciate that the problems are tough and will require all of us working together to restore this national treasure.

By law, NOAA is the nation's lead science agency for oil spills in marine and coastal environments.

Part of that role is to assess damage and help restore the natural resources injured as a result of the spill. One of my tasks here today is to give you a brief update on where we are with the assessment and restoration efforts

DEEPWATER HORIZON

Natural Resource Damage Assessment (NRDA)

The Deepwater Horizon Oil Spill set in motion the largest Natural Resource Damage Assessment (NRDA) in history. The affected 3 federal and 5 state Natural Resource Trustees are conducting the NRDA under the authority of the Oil Pollution Act of 1990 (OPA).

The trustees are in the process of developing two things:

- the public's claim for natural resource damages against the party or parties responsible for the spill, and
- the development and implementation of a restoration plan or series of plans as the means of compensating the Public for the harm done to natural resources and services.

The costs of the natural resource injury assessment and the ultimate damages related to implementation of the restoration plan are borne by the responsible party(ies).

NOAA is working with our co-trustees to develop a range of restoration strategies. We are involved in both short-term and long-term restoration efforts to return the Gulf to pre-spill conditions.

The NRDA restoration efforts are part of broader, long-term Gulf Coast recovery efforts recently outlined by the Gulf Coast Ecosystem Restoration Task Force. NOAA is an active participant in the Task Force and our staff ensure that our work is aligned with and supportive of its efforts.

Ecosystem level impacts

Impacts from the DWH spill resulted in ecosystem level impacts. Consequently, our injury assessment is being conducted at an ecosystem level.

Given the deep release of the oil into the marine environment, the deep and surface use of dispersant, and the complex currents at depths and in surface waters, the Trustees' studies demonstrate that billions of gallons of water were impacted with oil and dispersant concentrations greater than toxicity thresholds. This large impact has meant that the NRD Assessment studies have been conducted in almost every area of the regional ecosystem. These include science directed at measuring the exposure and ecological injuries to estuarine, shoreline, nearshore, water column, shelf, and deep-sea environments.

Impacts related to acute exposure to hydrocarbons and dispersants have been documented at locations throughout the northern GOM. These include the death of vegetation, plankton, deep sea corals, juvenile and adult sea turtles, marine mammals, shore and sea birds, and impacts to oiled shorelines and the organisms that inhabit them

Impacts due to potential chronic exposure to the hydrocarbons and dispersants released during the spill are more difficult to quantify. These relate to the concept that such negative effects may cascade through the ecosystem, affecting one group of organisms or habitats and then another and another through the linkages among them. Teasing these impacts out from the baseline requires substantial information over an extensive area and a long time frame.

Noted increases in the strandings of newborn dolphins in multiple Gulf states in the year following the end of the spill, adverse health effects measured in coastal dolphins from Barataria Bay, the recent documentation of the bacterium that causes a disease called brucellosis in these same coastal dolphins, along with abnormalities in larval development of fishes may all be examples of impacts caused by chronic exposure to oil within the Gulf ecosystem.

Presently, the longest-term NRDA studies of the effects of the spill consist of less than two years of field observations and analyses. Adequately investigating the large area and the large number of species and habitats possibly impacted necessitates collection and analyses of many samples. The results from the first two years of our studies are only now becoming available for synthesis and interpretation.

By design, the NRDA toxicity studies look at many permutations of exposure to oil - from fresh to weathered oil, and with and without dispersant. They are looking at toxicity to endemic

species, such as Eastern oyster, white shrimp, blue crab, tuna, cobia, goggle eye, mahi-mahi, sheepshead minnow, red drum, inland silverside, southern flounder, speckled sea trout, and grass shrimp.

Also being examined are acute and chronic impacts with end points including death, growth, cardiac and metabolic impacts, decreased fertilization, immunological impacts, behavioral changes, etc. This NRDA toxicity work is being conducted in labs at a dozen universities, many from around the Gulf coast.

The plan is to integrate the results of these toxicity studies with high-resolution models of the hydrodynamics that drove the oil and dispersant distribution during and after the release.

We anticipate that the unique ecosystem impacts of this spill – especially among very long-lived organisms such as turtles, tuna, and mammals - will mean that long-term monitoring of key species will be central to any restoration plan. Such work is critical to our ability to understand the causes of significant changes in the overall ecosystem.

Just as the NRD assessment is finding wide-ranging ecosystem impacts, so too, must the restoration that is due to the American Public be conducted at the ecosystem level.

Water quality, coastal habitats and species, blue water habitats and species and people are all key elements of this approach.

So, where are we with restoration? I'll describe the three relevant categories: emergency restoration, early restoration underway and the planning for the more comprehensive long-term restoration.

Emergency Restoration Projects

Emergency restoration is authorized under OPA when the action is necessary to minimize continuing or prevent additional injury, the action is feasible, and the action's costs are not unreasonable. In 2010, the trustees requested funding from BP for three emergency restoration projects, two of which have been funded so far.

The first project provides alternative wetland habitat in Mississippi for waterfowl and shorebirds that might otherwise winter in oil-affected habitats. The project was funded by BP and has been implemented.

The second emergency restoration project aims to improve the nesting and rearing success of endangered sea turtles on the Texas coast, including Padre Island National Seashore.

Some of the trustees have independently pursued additional emergency restoration actions.

Early Restoration Projects

Early restoration, while not specifically addressed in the OPA statute or guidance, provides an opportunity to identify restoration projects that are consistent with the types and magnitude of

the injury and implement the restoration while the injury assessment is still ongoing.

On April 21, 2011, the Deepwater Horizon NRDA Trustee Council announced an agreement under which BP committed to provide $1 billion toward implementation of early restoration projects. This early restoration agreement is the largest of its kind ever reached and represents an initial step toward fulfilling the responsible parties' obligation to fund the complete restoration of injured natural resources.

Programmatic Environmental Impact Statement (PEIS) Summary

Earlier this year, the trustees for the Deepwater Horizon oil spill asked the public for input on the types of restoration needed to address impacts from the spill. The comments were collected as part of the Programmatic Environmental Impact Statement (PEIS) process. The PEIS will serve as the core planning document for long-term restoration associated with the oil spill.

The trustees collected comments at public meetings in the Gulf region and Washington, DC, as well as online and verbal submissions. A total of 7,773 comments were received, with nearly 70 percent of those coming from Gulf residents and organizations.

The comments focused on three main categories: implementation approaches, marine mammals and turtles, and offshore resources. The PEIS summary can be found at gulfspillrestoration.noaa.gov.

The trustees are considering these comments as they create a draft PEIS, which should be available for public review in Summer 2012.

RESTORING FOR RESLIENCE

Though the NRDA process is ongoing, the earlier that restoration begins, the better, as long as it is strategically done.

The pillars of the Gulf of Mexico Regional Ecosystem Restoration Strategy offer a framework for our path forward, and this path is a holistic, scientifically informed, ecosystem approach with the goal of rebuilding a healthy, resilient Gulf ecosystem.

What have we learned from other restoration efforts that should inform this one? I'd highlight the importance of indicators, monitoring, peer review, public participation, transparency, and ongoing research and adaptive management. Let me say just a little about a couple of these.

Indicators

The development of indicators is part of the science that is needed for restoration to succeed. We need indicators that reflect the goals and the diversity of uses of the Gulf, that reflect meaningful changes in the Gulf – whether they're natural or human-induced, and that tell us when interventions are needed.

A list of potential indicators can become very, very long – mind-boggling, in fact - as well as expensive and labor-intensive to monitor. The big challenge and big opportunity here is to identify a small number of really meaningful indicators, not a lengthy list.

Fortunately there are numerous efforts underway to look at indicators in a new light. For example, a Working Group at the National Center for Ecological Analysis and Synthesis is working on a single Ocean Health Index. They use the analogy of a GDP, which captures the state of the economy. The Ocean Health Index focuses on 10 public goals that are benefits of a healthy ocean, i.e. ecosystem services: seafood provision, artisanal fishing opportunities, natural products (materials for aquariums or decorative purposes that are sustainably extracted as well as new drugs and other products), carbon storage, shoreline protection, sense of place, livelihoods, tourism and recreation, clean waters, and biodiversity. Indicators are being developed for each of the 10 goals. The indicators assess the current status relative to a reference previous state, recent trends (last 5 years), pressures, and resilience. The indicators then are incorporated into a single Ocean Health Index, which is the weighted sum of scores for all 10 goals.

This index is intended to be flexible across multiple scales, levels of data availability, types of data, and perspective. It is also intended to be useful for prioritizing monitoring and informing tradeoffs under different management scenarios. The index is being developed in a way that can be used regionally and, because it's universal, it can be used for comparisons globally.

How is this different from existing models? The Ocean Health Index approach explicitly addresses the flow of ecosystem services from the biophysical aspects of the ecosystem to the human uses of it.

While the Ocean Health Index effort is still under development, it is indicative of the kinds of innovative approaches to indicators and monitoring that we will need to consider as we implement long-term restoration and monitoring programs.

Role of monitoring

Monitoring is also a critical process in restoration. Its purpose is to help us understand how management actions affect ecosystems, including social and economic changes.

Both extensive long-term, large- scale monitoring and intensive monitoring at key locations are important. The long-term, large large-scale monitoring shows the extent to which the ecosystem has changed, as well and how quickly it returns to its pre-disturbed state, while intensive monitoring at specific locations gives detailed information on finer-scale interactions and processes affecting that can affect resilience. Redundancy in monitoring – that is, monitoring multiple instances of similar ecosystem types, is important in the event that a single site is made unavailable for monitoring.

The challenge is to design and implement monitoring that focuses on meaningful processes not just states.

LOOKING AHEAD

Before closing, I want to emphasize that the NRDA process, the Strategy developed by the Gulf Coast Ecosystem Restoration Task Force, and the National Ocean Policy are strongly co-complementary they set the stage for this Summit.

As we look to the work ahead in restoring the Gulf ecosystem, this is a time of great opportunity to put an international treasure on the path to recovery. It will not be easy or quick, but is most definitely worth doing, and doing well.